THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 13

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte KAGENORI NAGAO

Appeal No. 95-0792
Application No. 07/828,092[1]

ON BRIEF

Before JERRY SMITH, BARRETT, and FLEMING, ***Administrative Patent_Judges***.

FLEMING, ***Administrative Patent Judge***.

DECISION ON APPEAL

[1] Application for patent filed January 30, 1992.

This is a decision on appeal from the final rejection of claims 1 through 26, all of the claims pending in the application.

The invention relates to an image processing method and apparatus for improving image recognition rates when applied to character and figure recognition.

The independent claim 1 is reproduced as follows:

> 1. A digital image processing method, comprising the steps of:
> (a) partitioning a multi-dimensional image comprising a plurality of image elements into overlapping multi-dimensional regions;
> (b) applying a predetermined weighting function to the image elements within each region for distinguishing image elements at the periphery of each region from image elements at the center of each region, to provide a weighted image element value for each image element; and
> (c) determining a characteristic output of each region from the weighted image element values, the characteristic output comprising one or more characteristics of the input image within that region.

The Examiner relies on the following references:

Bishop et al. (Bishop)	4,589,140	May 13, 1986
Waksman et al. (Waksman)	4,745,633	May 17, 1988
Gold et al. (Gold)	4,748,679	May 31, 1988

Clark 4,805,225 Feb. 14, 1989

Claims 1, 3 through 9, and 15 through 21 stand rejected under 35 U.S.C. § 101 as being non-statutory subject matter[2].

[2]In the final action, claims 1 through 26 were rejected under 35 U.S.C. § 101. Upon reconsidering the rejection, the Examiner withdrew the rejection for claims 2, 10 through 14 and 22 through 26. See the supplemental Examiner's answer pages 1 and 2.

Claims 1 through 4, 7, 10, 12, 15, 17, 19 and 22 through 24 stand rejected under 35 U.S.C. § 102 as being anticipated by Gold. Claims 6, 11 and 18 stand rejected under 35 U.S.C. § 103 as being unpatentable over Gold. Claim 26 stands rejected under 35 U.S.C. § 103 as being unpatentable over Gold and Clark. Claims 5 and 16 stand rejected under 35 U.S.C. § 103 as being unpatentable over Gold and Waksman. Claims 9, 14, 21 and 25 stand rejected under 35 U.S.C. § 103 as being unpatentable over Gold and Bishop.

Rather than reiterate the arguments of Appellant and the Examiner, reference is made to the brief and answers[3] for the respective details thereof.

OPINION

After a careful consideration of the record before us, we will not sustain the 35 U.S.C. § 101 rejection of claims 1, 3 through 9, and 15 through 21, nor will we sustain the 35 U.S.C.

[3]The Examiner responded to the brief with an Examiner's answer, mailed July 12, 1994. The Examiner mailed a supplemental Examiner's answer on June 11, 1996.

§ 102 rejection or the 35 U.S.C. § 103 rejections.

With respect to the mathematical algorithm exception, the Federal Circuit in ***State Street Bank & Trust Co. v. Signature Financial Group, Inc.***, 149 F.3d 1368, 1373, 47 USPQ2d 1596, 1600 (Fed. Cir. 1998) first identified the judicially created three categories that are not patentable (laws of nature, natural phenomena and abstract ideas) citing ***Diamond v. Diehr***, 450 U.S.
175, 185, 209 USPQ 1, 7 (1981). The opinion went on to note "the
mathematical algorithm is unpatentable only to the extent that it represents an abstract idea" and is thus not "useful." ***State***
Street Bank 149 F.3d at 1373 & n.4, 47 USPQ2d at 1600-01 & n.4. Later in its opinion, the court returned to this issue: "[T]he mere fact that a claimed invention involves inputting numbers, calculating numbers, outputting numbers, and storing numbers, in and of itself, would not render it nonstatutory subject matter, unless, of course, its operation does not produce a ‘useful, concrete and tangible result.’" ***State***

Street Bank 149 F.3d at 1374, 47 USPQ2d at 1602. In this case, the court stated that "the transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calcula-tions into a final share price, constitutes a practical application of a mathematical algorithm ... because it produces 'a useful, concrete and tangible result' ...." ***State Street Bank*** 149 F.3d at 1373, 47 USPQ2d at 1601.

Significantly, the court concluded its analysis of the mathematical algorithm issue as follows: "The question of

whether a claim encompasses statutory subject matter should not focus on which of the four categories of subject matter a claim is directed to . . . but rather on the essential characteristics of the subject matter, in particular, its practical utility." ***State Street Bank*** 149 F.3d at 1375, 47 USPQ2d at 1602. With respect to the Freeman-Walter-Abele test, the Federal Circuit held the district court erred in applying it. According to the court, after ***Diehr*** and ***Chakrabarty***[4] were decided by the Supreme Court, the test had "little, if any, applicability to determining the presence of statutory subject matter." ***State Street Bank*** 149 F.3d at 1374, 47 USPQ2d at 1601.

Appellant's independent claim 1 recites a

> digital image processing method, comprising the steps of:
> (a) partitioning a multidimensional image comprising a plurality of image elements into overlapping multi-dimensional regions;
> (b) applying a predetermined weighting function to the image elements within each region for distinguishing image elements ...; and

[4]***Diamond v. Chakrabarty***, 447 U.S. 303, 206 USPQ 193 (1980).

> (c) determining a characteristic output of each region ....

Appellant's other independent claim 15 recites an

> apparatus for processing an image having a plurality of image elements, comprising:
> (a) masking means for partitioning a multidimensional image into overlapping multi-dimensional regions;
> (b) adjusting means ... for applying a predetermined weighting function to the image elements within each region ...; and
> (c) computing means ... for determining a characteristic output of each region ....

For claims 1 and 3 through 9, Appellant argues on page 6 of the brief that the process steps do not directly or indirectly recite a mathematical algorithm, but instead define physical processes performed on a digital image pixel data. In regard to claims 15 through 21, Appellant argues on pages 6 and 7 of the brief that the claims recite a machine in means-plus-function form and these means reciting structural elements must be construed to be the corresponding structure disclosed in the specification.

In light of Appellant's arguments, we find that claims 1 and 3 through 9 recite subject matter that is a practical application of processing a digital image pixel data having a

plurality of image elements by partitioning the image into overlapping multi-dimensional regions, applying a weighting function to the image elements within each region and determining a characteristic output of each region. In addition, we find that claims 15 through 21 recite a machine for processing a digital image pixel data using the above process. Therefore, we find statutory subject matter.

Claims 1 through 4, 7, 10, 12, 15, 17, 19 and 22 through 24 stand rejected under 35 U.S.C. § 102 as being anticipated by

Gold. Appellant argues on page 8 of the brief that with respect to method claims 1 through 4, 7, 10 and 12, Gold fails to disclose the claimed steps of partitioning a multi-dimensional image into overlapping multi-dimensional regions and applying a predetermined weighting function to the image elements within each region. Appellant further argues on page 9 that with respect to the apparatus claims 15, 17, 19, 22 and 23, Gold fails to disclose masking means for partitioning a multi-dimensional image into overlapping multi-dimensional regions.

On page 10 of the answer, the Examiner argues that Gold teaches partitioning an image comprising a plurality of image elements into overlapping regions. The Examiner directs our attention to the teachings found in column 8, lines 10-29, and Figure 7 of Gold. On page 18 of the answer, the Examiner states that it is reasonable to interpret Figure 7 as showing overlapping multi-dimensional regions.

It is axiomatic that anticipation of a claim under § 102 can be found only if the prior art reference discloses every element of the claim. ***See In re King***, 801 F.2d 1324, 1326, 231 USPQ 136,

138 (Fed. Cir. 1986) and ***Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co***., 730 F.2d 1452, 1458, 221 USPQ 481, 485 (Fed. Cir. 1984).

We note that the Examiner did not make clear what elements in the Gold Figure 7 correspond to the claimed "multi-dimensional image", "image elements" and "multi-dimensional regions" as recited in Appellant's claims. As disclosed on page 5 of Appellant's specification and the abstract, Figure 5 shows a two-dimensional image 23 which is divided or partitioned into a plurality of overlapping regions 25, 27, 29 and 31. Appellant further discloses that the pixels, image elements, within each of these regions are weighted in accordance with a predetermined function.

Turning to the claim language, Appellant's claim 1 recites "partitioning a multi-dimensional image comprising a plurality of image elements into overlapping multi-dimensional regions." Furthermore, we note that claim 1 recites "applying a predetermined weighting function to the image elements within each region." We note that Appellant's claim 15 recites similar language.

Gold teaches in column 8, lines 6-12, that Figure 7 shows a window 132 having a series of lapped pixels 130. We agree that the Gold window 132 reads on a multi-dimensional image and the Gold lapped pixels 130 read on image elements. However, we fail to find that Gold teaches partitioning the window into overlapping multi-dimensional regions having image elements within each region as required by the claims. Therefore, we fail

to find that Gold teaches all of the limitations recited in Appellant's claims and thereby we will not sustain the Examiner's rejection.

Claims 6, 11 and 18 stand rejected under 35 U.S.C. § 103 as being unpatentable over Gold. Claim 26 stands rejected under
35 U.S.C. § 103 as being unpatentable over Gold and Clark. Claims 5 and 16 stand rejected under 35 U.S.C. § 103 as being unpatentable over Gold and Waksman. Claims 9, 14, 21 and 25 stand rejected under 35 U.S.C. § 103 as being unpatentable over Gold and Bishop. We note that for all of these rejections of these dependent claims the Examiner relies on Gold for the above limitations. Therefore, we will not sustain these rejections for the same reason pointed out above.

We have not sustained the rejections of claims 1, 3 through 9, and 15 through 21 under 35 U.S.C. § 101, claims 1 through 4, 7, 10, 12, 15, 17, 19 and 22 through 24 under 35 U.S.C. § 102 and claims 5, 6, 9, 11, 14, 16, 18, 21, 25 and 26 under 35 U.S.C.
§ 103. Accordingly, the Examiner's decision is reversed.

REVERSED

JERRY SMITH Administrative Patent Judge	)	
LEE E. BARRETT Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
MICHAEL R. FLEMING Administrative Patent Judge	)	

Appeal No. 95-0792
Application No. 07/828,092

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REVERSED

Prepared: October 20, 2000